

Sustainability in Production – Performance Indicators, Monitoring & Assessment

Key Words: Performance Indicators (PIs), Sustainability, Digital/Real Product/Factory

Abstract

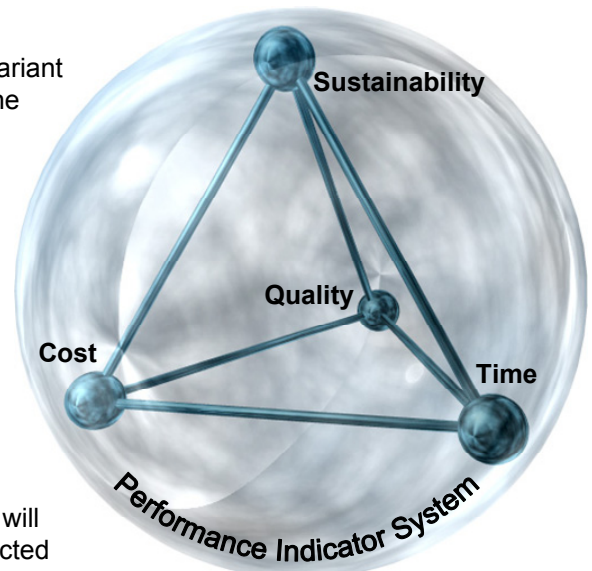
Traditionally, PIs like throughput time or cost of a product-variant are connected to the magic triangle (Cost-Time-Quality). The current effort towards a sustainable world is leading to new PIs such as CO₂ emission. This work is aiming for a holistic Performance Indicator System including methods for PI-monitoring and a PI based assessment of products/productions.

Environment

IWF and Nova are project partners in the EU project VFF (Virtual Factory Framework, <http://www.vff-project.eu/>) which aims for a new conceptual framework designed to implement the next generation Virtual Factory, constantly synchronized with the Real Factory. PIs are crucial means in VFF in order to build next generation factories. The work will be carried out at IWF and the results of this thesis are expected to impact the Framework envisioned in VFF.

Content of the work

Initially, the **state of the art** regarding PIs and sustainability issues/approaches in the context of the value chain „Customer-Product-Production“ will be studied. Based on the mature PIs established according to the magic triangle (Cost-Time-Quality) these PIs will be clustered, structured and arranged accordingly. Moreover, Sustainability PIs (SPIs) will be added leading towards an overall classification reaching a **Performance Indicator System** classifying all PIs within the tetrahedron. This will enable the **monitoring** of specific PIs and the sustainability **assessment**. In case of a Master thesis, a thorough **cause investigation** spanning from the SPIs to the consumers, e.g. by a modified fishbone diagram, will deepen the knowledge and causalities of the SPIs leading to an improved version of the Performance Indicator System.



From the magic triangle (Cost-Time-Quality) towards the magic tetrahedron including Sustainability quantified by PIs

Work packages

- **State of the Art** analysis: PIs, Digital/Real Product/Factory, Sustainability issues/approaches
- **PI-Structure**: Extending the magic triangle including Sustainability PIs and an overall classification system
- **Monitoring**: Supporting PI calculation like CO₂ aggregation
- **Assessment**: Method to verify whether the value chain “Customer-Product-Process” is sustainable
- **Cause investigation** for SPIs (in case of a Masterthesis)
- **Improved Performance Indicator System** based on the cause analysis (in case of a Masterthesis)
- **Dissemination**: Mid-term and Final presentation, Documentation

Informationen & Administration

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